REMARKS

Double Patenting

The Examiner has rejected claims 1-11 based on the judicially created doctrine of obviousness-type double patenting over claims 1-4 of U.S. Patent No. 6,740,175. In response, Applicant encloses herewith a timely filed Terminal Disclaimer wherein the instant application disclaims the statutory term of any patent which may be granted thereon which would extend beyond the expiration date of the full statutory term of Patent No. 6,740,175. Applicant respectfully requests that this rejection now be withdrawn.

Claim Objections

The Examiner has objected to claim 4 as being a substantial duplicate of claim 10 directed to an induction hardened hub. Claim 4 depends from claim 3 which, in turn, depends from claim 1. Based on this dependency, claim 4 includes the limitations that the component is a hub unit or joint wherein the product made by claim 1 is produced by casting the steel wherein at least a part of the product made by casting is inductively hardened. The casting limitation is not present in claim 10. Nevertheless, Applicant has amended claim 4 herein to delete "hub unit" therefrom. Amended claim 4 is now directed to a "joint" and, as such, has overcome the Examiner's objection thereto.

Claim Rejections

Claims 1-3 and 5 stand rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Patent No. 41-1131176 (JP '176). The Examiner states that JP '176 discloses a forged and induction hardened steel alloy 10 which meets the recited claims. In addition, the Examiner states that, when calculated, alloy 10 has a Ceq of 0.8197 and is within the claimed range of 0.75 to 0.90.

Applicant has canceled claim 5 and amended claim 1 to incorporate the Silicon element of claim 5 of 0.59 to 0.9%, thereby differentiating the present invention of claim 1 from alloy 10 of JP '176 which contains 0.53% silicon. Support for this amendment is found in the silicon range of 0.59 to 0.9 mass % Si range of original claims 7 and 11.

In addition, claim 6 has been amended to change the silicon content from "0.5 to 1.0%" to read --0.64 to 1.0%--. Support for this amendment may be found, for example, in the specification at pages 19-20, Tables B1 and B2.

Furthermore, independent claims 1, 6 and 10 have been amended to delete "comprising" and insert therefor --consisting essentially of--. This amendment eliminates any

intentional addition of aluminum or other elements taught by JP '176 to the present composition.

Applicant points out that all of the alloys of JP '176 contain a mandatory aluminum addition and, in this regard, JP '176 teaches that aluminum definitely should be present in the amount of between 0.019 to 0.05% Al. Aluminum is not preferred in the composition of the present invention because aluminum tends to create a chemical bond with oxygen to form alumina, as an intercalated nucleus, whereby the resultant steel is liable to cause fracture.

Moreover, Applicant notes that JP '176 fails to disclose an improvement of machinability, i.e., cutting ability but, rather, teaches that Si tends to deteriorate machinability. Paragraph [0038] of JP '176 reads, in part, as follows:

> "(Si: 0.5 -1.8%)
> Si is an element for improving anti-temper weakening properties, thereby improving a strength of gear face.... If the amount of Si exceeds 1.8%, machinability tends to be deteriorated."

Thus, JP '176 merely describes a negative teaching as to the function of Si on the improvement of machinability. Therefore, JP '176 teaches away from the present invention. To the contrary, the Applicant in the instant application teaches that Si improved miachineability. For example, see paragraph [0038] on page 5 and paragraph [0046] on page 7 of the instant specification.

Claims 1-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,372,057 to Fujiura et al. Claims 1-3 and 5-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent No. 41-0317095 (JP ' 095) or Japanese Patent No. 41-1131176 (JP '176).

In response, Applicant directs the Examiner's attention to column 3, lines 5-9 of Fujiura which reads as follows:

> "It is desired to limit the silicon content to 0.60 wt. % to avoid tendency of the microstructure to transform into a bainite phase, which it is believed likely could cause spalling defects in treads of the wheel rim during running and/or braking operations."

JP '095 also fails to teach or suggest the important role of the Si content in the presently claimed invention. JP '095 does not recognize the very problem to be solved by the present invention. JP '095 merely describes a negative teaching as to the function of Si on the improvement of machinability. For example, paragraph [0011] of JP '095 discloses:

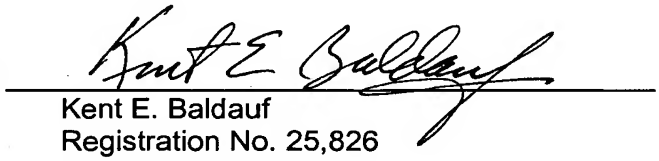
"[0011]
(Si: 0.01-1.00%)
Si functions as a deoxydant. However, quantity of Si deteriorates machinability and hot workability."

Therefore, JP '095 also teaches away from the present invention.

The Examiner's attention is also directed to the table appearing on page 4 of JP '095 which lists compositions for various alloys of that invention. Applicant notes that the manganese (Mn) content in the alloys are all above the 1.0 max specified in the present claims. The present application discloses that when manganese contents exceed 1.0%, the amount of proeutectoid ferrite is reduced, resulting in a significant reduction in machineability. Also, in the table on page 4 of JP '095, Alloy 5 not only contains 0.60% Mn but also 0.26% Si, which is substantially below the minimum Si contents set forth in the claims of the present application. Most of the vanadium contents of the alloys set forth in the table in JP '095 are at 0.10% V. However, all of these alloys of JP '095 contain aluminum. None of the specific alloy examples in JP '095 meets the claimed composition when Al is excluded. As explained above, aluminum is not a desired element of the composition of the present invention.

Based on the foregoing amendments and remarks, as well as the enclosed Terminal Disclaimer, Applicant believes that the application is now in condition for allowance and respectfully requests reconsideration and that a timely Notice of Allowance be issued.

Respectfully submitted,
THE WEBB LAW FIRM

By 

Kent E. Baldauf
Registration No. 25,826
Attorney for Applicants
700 Koppers Building
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219
Telephone: 412-471-8815
Facsimile: 412-471-4094